CUPS Software Programmers Manual

CUPS−SPM−1.1

Easy Software Products

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Preface

This software programmers manual provides software programming information for the Common UNIX Printing System ("CUPS") Version 1.1.

System Overview

CUPS provides a portable printing layer for UNIX®−based operating systems. It has been developed by Easy Software Products to promote a standard printing solution for all UNIX vendors and users. CUPS provides the System V and Berkeley command−line interfaces.

CUPS uses the Internet Printing Protocol ("IPP") as the basis for managing print jobs and queues. The Line Printer Daemon ("LPD") Server Message Block ("SMB"), and AppSocket (a.k.a. JetDirect) protocols are also supported with reduced functionality. CUPS adds network printer browsing and PostScript Printer Description ("PPD") based printing options to support real−world printing under UNIX.

CUPS also includes a customized version of GNU Ghostscript (currently based off GNU Ghostscript 5.50) and an image file RIP that are used to support non−PostScript printers. Sample drivers for HP and EPSON printers are included that use these filters.

Document Overview

This software programmers manual is organized into the following sections:

Notation Conventions

Various font and syntax conventions are used in this guide. Examples and their meanings and uses are explained below:

Example	Description
`lpstat` `lpstat(1)`	The names of commands; the first mention of a command or function in a chapter is followed by a manual page section number.
/var */usr/share/cups/data/testprint.ps*	File and directory names.
`Request ID is Printer-123`	Screen output.
`lp -d printer filename ENTER`	Literal user input; special keys like **`ENTER`** are in ALL CAPS.
12.3	Numbers in the text are written using the period (.) to indicate the decimal point.

Abbreviations

The following abbreviations are used throughout this manual:

kb
: Kilobytes, or 1024 bytes

Mb
: Megabytes, or 1048576 bytes

Gb
: Gigabytes, or 1073741824 bytes

Other References

CUPS Software Administrators Manual
: An administration guide for the CUPS software.

CUPS Software Users Manual
: An end−user guide for using the CUPS software.

1 − Printing System Overview

This chapter provides an overview of how the Common UNIX Printing System works.

The Printing Problem

For years *the printing problem* has plagued UNIX. Unlike Microsoft® Windows® or Mac OS, UNIX has no standard interface or system in place for supporting printers. Among the solutions currently available, the Berkeley and System V printing systems are the most prevalent.

These printing systems support line printers (text only) or PostScript printers (text and graphics), and with some coaxing they can be made to support a full range of printers and file formats. However, because each varient of the UNIX operating system uses a different printing system than the next developing printer drivers for a wide range of printers and operating systems is extremely difficult. That combined with the limited volume of customers for each UNIX varient has forced most printer vendors to give up supporting UNIX entirely.

CUPS is designed to eliminate *the printing problem*. One common printing system can be used by all UNIX varients to support the printing needs of users. Printer vendors can use its modular filter interface to develop a single driver program that supports a wide range of file formats with little or no effort. Since CUPS provides both the System V and Berkeley printing commands, users (and applications) can reap the benefits of this new technology with no changes.

The Technology

CUPS is based upon an emerging Internet standard called the Internet Printing Protocol. IPP has been embraced by dozens of printer and printer server manufacturers and is supported by Microsoft Windows 2000.

IPP defines a standard protocol for printing as well as managing print jobs and printer options like media size, resolution, and so forth. Like all IP−based protocols, IPP can be used locally or over the Internet to printers hundreds or thousands of miles away. Unlike other protocols, however, IPP also supports access control, authentication, and encryption, making it a much more capable and secure printing solution than older ones.

IPP is layered on top of the Hyper−Text Transport Protocol ("HTTP") which is the basis of web servers on the Internet. This allows users to view documentation, check status information on a printer or server, and manage their printers, classes, and jobs using their web browser.

CUPS provides a complete IPP/1.1 based printing system that provides Basic, Digest, and local certificate authentication and user, domain, or IP−based access control. TLS encryption will be available in future versions of CUPS.

Jobs

Each file or set of files that is submitted for printing is called a *job*. Jobs are identified by a unique number starting at 1 and are assigned to a particular destination, usually a printer. Jobs can also have options associated with them such as media size, number of copies, and priority.

Classes

CUPS supports collections of printers known as *classes*. Jobs sent to a class are forwarded to the first available printer in the class.

Filters

Filters allow a user or application to print many types of files without extra effort. Print jobs sent to a CUPS server are filtered before sending them to a printer. Some filters convert job files to different formats that the printer can understand. Others perform page selection and ordering tasks.

CUPS provides filters for printing many types of image files, HP−GL/2 files, PDF files, and text files. CUPS also supplies PostScript and image file Raster Image Processor ("RIP") filters that convert PostScript or image files into bitmaps that can be sent to a raster printer.

Backends

Backends perform the most important task of all − they send the filtered print data to the printer.

CUPS provides backends for printing over parallel, serial, and USB ports, and over the network via the IPP, JetDirect (AppSocket), and Line Printer Daemon ("LPD") protocols. Additional backends are available in network service packages such as the SMB backend included with the popular SAMBA software.

Backends are also used to determine the available devices. On startup each backend is asked for a list of devices it supports, and any information that is available. This allows the parallel backend to tell CUPS that an EPSON Stylus Color 600 printer is attached to parallel port 1, for example.

Printer Drivers

Printer drivers in CUPS consist of one of more filters specific to a printer. CUPS includes sample printer drivers for Hewlett−Packard LaserJet and DeskJet printers and EPSON 9−pin, 24−pin, Stylus Color, and Stylus Photo printers. While these drivers do not generate optimal output for the different printer models, they do provide basic printing and demonstrate how you can write your own printer drivers and incorporate them into CUPS.

Networking

Printers and classes on the local system are automatically shared with other systems on the network. This allows you to setup one system to print to a printer and use this system as a printer server or spool host for all of the others. Users may then select a local printer by name or a remote printer using "name@server".

CUPS also provides *implicit classes*, which are collections of printers and/or classes with the same name. This allows you to setup multiple servers pointing to the same physical network printer, for example, so that you aren't relying on a single system for printing. Because this also works with printer classes, you can setup multiple servers and printers and never worry about a single point of failure unless all of the printers and servers go down!

2 − The CUPS API

This chapter describes the CUPS Application Programmers Interface ("API").

The CUPS API Library

The CUPS library provides a whole collection of interfaces needed to support the internal needs of the CUPS software as well as the needs of applications, filters, printer drivers, and backends.

Unlike the rest of CUPS, the CUPS API library is provided under the GNU Library General Public License. This means that you can use the CUPS API library in both proprietary and open−source programs.

Programs that use the CUPS API library typically will include the `<cups/cups.h>` header file:

```
#include <cups/cups.h>

...

jobid = cupsPrintFile("myprinter", "filename.ps", "title",
                      num_options, options);
```

Use the `−lcups` compiler option when linking to the CUPS API library:

```
cc −o program program.c −lcups ENTER
```

Additional options and libraries may be required depending on the operating system and the location of the CUPS API library.

Detecting the CUPS API Library in GNU Autoconf

GNU autoconf is a popular configuration tool used by many programs. Add the following lines to your *configure.in file to check for the CUPS API library in your configuration script:*

```
AC_CHECK_LIB(socket,socket,
if test "$uname" != "IRIX"; then
        LIBS="-lsocket $LIBS"
else
        echo "Not using -lsocket since you are running IRIX."
fi)
AC_CHECK_LIB(nsl,gethostbyaddr,
if test "$uname" != "IRIX"; then
        LIBS="-lnsl $LIBS"
else
        echo "Not using -lnsl since you are running IRIX."
fi)

AC_CHECK_LIB(cups,httpConnect)
```

Printing Services

The CUPS API library provides some basic printing services for applications that need to print files.

Include Files

The include file used by all of these functions is `<cups/cups.h>`:

```
#include <cups/cups.h>
```

Printing a File

The CUPS API provides two functions for printing files. The first is `cupsPrintFile` which prints a single named file:

```
#include <cups/cups.h>

...

int jobid;

...

jobid = cupsPrintFile("name", "filename", "title", 0, NULL);
```

The `name` string is the name of the printer or class to print to. The `filename` string is the name of the file to print. The `title` string is the name of the print job, e.g. "Acme Word Document".

The return value is a unique ID number for the print job or 0 if there was an error.

Printing Multiple Files

The second printing function is `cupsPrintFiles`:

```
#include <cups/cups.h>

...

int        jobid;
int        num_files;
const char *files[100];
...

jobid = cupsPrintFiles("name", num_files, files, "title", 0, NULL);
```

Instead of passing a filename string as with `cupsPrintFile()`, you pass a file count (`num_files`) and filename pointer array (`files`) for each file that you want to print.

As with `cupsPrintFile()`, the return value is a unique ID for the print job.

Cancelling Jobs

The `cupsCancelJob()` function cancels a queued print job:

```
#include <cups/cups.h>

...

int jobid;
int status;
...

status = cupsCancelJob("name", jobid);
```

The `name` string specifies the destination and is used to determine the server to send the request to. The `jobid` value is the integer returned from a previous `cupsPrintFile()` or `cupsPrintFiles()` call.

`cupsCancelJob()` returns `1` if the job was successfully cancelled and `0` if there was an error.

Getting the Available Printers and Classes

The `cupsGetDests()` function can be used to get a list of the available printers, classes, and instances that a user has defined:

```
#include <cups/cups.h>

...

int         num_dests;
cups_dest_t *dests;

...

num_dests = cupsGetDests(&dests);
```

Each destination is stored in a `cups_dest_t` structure which defines the printer or class name, the instance name (if any), if it is the default destination, and the default options the user has defined for the destination:

```
typedef struct               /**** Destination ****/
{
```

```
  char          *name,       /* Printer or class name */
                *instance;   /* Local instance name or NULL */
  int           is_default;  /* Is this printer the default? */
  int           num_options; /* Number of options */
  cups_option_t *options;    /* Options */
} cups_dest_t;
```

The destinations are sorted by name and instance for your convenience. Once you have the list of available destinations, you can lookup a specific destination using the `cupsGetDest()` function:

```
#include <cups/cups.h>

...

int         num_dests;
cups_dest_t *dests;
cups_dest_t *mydest;

...

mydest = cupsGetDest("name", "instance", num_dests, dests);
```

The `name` string is the printer or class name. You can pass a value of `NULL` to get the default destination.

The `instance` string is the user−defined instance name. Pass `NULL` to select the default instance, e.g. "name" instead of "name/instance".

Printing with Options

All of the previous printing examples have passed `0` and `NULL` for the last two arguments to the `cupsPrintFile()` and `cupsPrintFiles()` functions. These last two arguments are the number of options and a pointer to the option array:

```
int cupsPrintFile(const char *name, const char *filename, const char *title,
                  int num_options, cups_option_t *options);
int cupsPrintFiles(const char *name, int num_files, const char **files,
                   const char *title, int num_options,
                   cups_option_t *options);
```

The `cups_option_t` structure holds each option and its value. These are converted as needed and passed to the CUPS server when printing a file.

The simplest way of handling options is to use the `num_options` and `options` members of the `cups_dest_t` structure described earlier:

```
#include <cups/cups.h>

...

int         jobid;
int         num_dests;
cups_dest_t *dests;
cups_dest_t *mydest;

...

mydest = cupsGetDest("name", "instance", num_dests, dests);
```

```
jobid  = cupsPrintFile(mydest->name, "filename", "title",
                       mydest->num_options, mydest->options);
```

This effectively uses the options a user has previous selected without a lot of code.

Setting Printer Options

Options can also be set by your program using the `cupsAddOption()` function:

```
#include <cups/cups.h>

...

int           num_options;
cups_option_t *options;

...

num_options = 0;
options     = NULL;

...

num_options = cupsAddOption("name", "value", num_options, &options);
num_options = cupsAddOption("name", "value", num_options, &options);
num_options = cupsAddOption("name", "value", num_options, &options);
num_options = cupsAddOption("name", "value", num_options, &options);
```

The `name` string is the name of the option, and the `value` string is the value for that option.

Each call to `cupsAddOption()` returns the new number of options. Since adding two options with the same name overwrites the first value with the second, do not assume that calling `cupsAddOptions()` 20 times will result in 20 options.

Call `cupsFreeOptions` once you are done using the options:

```
#include <cups/cups.h>

...

int           num_options;
cups_option_t *options;

...

cupsFreeOptions(num_options, options);
```

Getting Errors

If any of the CUPS API printing functions returns an error, the reason for that error can be found by calling `cupsLastError()` and `cupsErrorString()`. `cupsLastError()` returns the last IPP error code that was encountered. `cupsErrorString()` converts the error code to a localized message string suitable for presentation to the user:

```
#include <cups/cups.h>
```

```
...

int jobid;

...

if (jobid == 0)
  puts(cupsErrorString(cupsLastError()));
```

PPD Services

CUPS includes functions to access and manipulate PostScript Printer Description ("PPD") files that are used with the printer drivers in CUPS.

Each PPD file enumerates the available features provided by a printer, including conflict information for specific options (e.g. can't duplex output on envelopes.)

Include Files

Include the `<cups/ppd.h>` header file to use the PPD functions:

```
#include <cups/ppd.h>
```

This header file is also included by the `<cups/cups.h>` header file.

Getting a PPD File for a Printer

The `cupsGetPPD()` function retrieves the PPD file for the named printer or class:

```
#include <cups/cups.h>

...

const char *filename;

filename = cupsGetPPD("name");
```

The `name` string is the name of the printer or class, including the remote server name as appropriate (e.g. "printer@server".)

The return value is a pointer to a filename in static storage; this value is overwritten with each call to `cupsGetPPD()`. If the printer or class does not exist, a `NULL` pointer will be returned.

Loading a PPD File

The `ppdOpenFile()` function "opens" a PPD file and loads it into memory:

```
#include <cups/ppd.h>

...

ppd_file_t *ppd;
```

```
ppd = ppdOpenFile("filename");
```

The `filename` string is the name of the file to load, such as the value returned by the `cupsGetPPD()` function.

The return value is a pointer to a structure describing the contents of the PPD file or NULL if the PPD file could not be read.

Freeing PPD File Information

Once you are done using a PPD file, call the `ppdClose()` function to free all memory that has been used:

```
#include <cups/ppd.h>

...

ppd_file_t *ppd;

...

ppdClose(ppd);
```

The PPD File Structure

Each PPD file contains a number of capability attributes, printer options, and conflict definitions. The page size options also include the physical margins for the printer and the minimum and maximum sizes for the printer. All of this information is stored in the `ppd_file_t` structure.

Capabilities

Each PPD file contains a number of informational attributes that describe the capabilities of the printer. These are provided in the `ppd_file_t` structure in the following members:

Member	Type	Description
`accurate_screens`	`int`	1 = supports accurate screens
`color_device`	`int`	1 = color device
`colorspace`	`ppd_cs_t`	Default colorspace: PPD_CS_CMYK, PPD_CS_CMY, PPD_CS_GRAY, PPD_CS_RGB, PPD_CS_RGBK, PPD_CS_N
`contone_only`	`int`	1 = printer is continuous tone only
`num_emulations` `emulations`	`int` `ppd_emul_t *`	Emulations supported by the printer
`flip_duplex`	`int`	1 = need to flip odd pages when duplexing
`num_fonts` `fonts`	`int` `char **`	The fonts available on the printer.
`jcl_begin`	`char *`	Job Control Language commands for

jcl_ps jcl_end		PostScript output
landscape	int	Landscape orientation, −90 or 90 degrees
lang_encoding	char *	The character used for the option strings
lang_version	char *	The language used for the options strings (English, French, etc.)
language_level	int	PostScript language level, 1 to 3
manual_copies	int	1 = Copies are done manually
model_number	int	Driver−specific model number.
patches	char *	Patch commands to send to the printer
manufacturer	char *	The Manufacturer attribute from the PPD file, if any
modelname	char *	The ModelName attribute from the PPD file
nickname	char *	The NickName attribute from the PPD file, if any
product	char *	The Product attribute from the PPD file, if any
shortnickname	char *	The ShortNickName attribute from the PPD file, if any
throughput	int	Number of pages per minute
ttrasterizer	char *	The TruType font rasterizer (Type42)
variable_sizes	int	1 = supports variable sizes

Options and Groups

PPD files support multiple options, which are stored in `ppd_option_t` and `ppd_choice_t` structures by the PPD functions.

Each option in turn is associated with a group stored in the `ppd_group_t` structure. Groups can be specified in the PPD file; if an option is not associated with a group then it is put in a "General" or "Extra" group depending on the option.

Groups can also have sub−groups; CUPS currently limits the depth of sub−groups to 1 level to reduce programming complexity.

Conflicts

PPD files support specification of conflict conditions between different options. Conflicts are stored in `ppd_conflict_t` structures which specify the options that conflict with each other.

Page Sizes

PPD files specify all of the available pages sizes and the physical margins associated with them. These sizes are stored in `ppd_size_t` structures and are available in the `num_sizes` and `sizes` members of the `ppd_file_t` structure. You can lookup a particular page size with the `ppdPageWidth()`, `ppdPageLength()`, and `ppdPageSize()` functions:

```
#include <cups/ppd.h>

...

ppd_file_t *ppd;
ppd_size_t *size;
float      width;
float      length;

...

size   = ppdPageSize(ppd, "size");
width  = ppdPageWidth(ppd, "size");
length = ppdPageLength(ppd, "size");
```

The `size` string is the named page size option. The width and length are in points; there are 72 points per inch. The `ppd_size_t` structure contains the width, length, and margin information:

```
typedef struct    /**** Page Sizes ****/
{
  int   marked;   /* Page size selected? */
  char  name[41]; /* Media size option */
  float width,    /* Width of media in points */
        length,   /* Length of media in points */
        left,     /* Left printable margin in points */
        bottom,   /* Bottom printable margin in points */
        right,    /* Right printable margin in points */
        top;      /* Top printable margin in points */
} ppd_size_t;
```

Custom Page Sizes

Besides the standard page sizes listed in a PPD file, some printers support variable or custom page sizes. If `variables_sizes` is non−zero, the `custom_min`, `custom_max`, and `custom_margins` members of the `ppd_file_t` structure define the limits of the variable sizes.

To get the resulting media size, use a page size string of `Custom.`*`width`*`x`*`length`*, where `width` and `length` are integer values in points:

```
Custom.612x792   [8.5 inches wide, 11 inches long]
Custom.1224x792  [17 inches wide, 11 inches long]
```

Marking Options

Before marking any user−defined options, call the `ppdMarkDefaults()` function to mark the default options from the PPD file:

```
#include <cups/ppd.h>
```

```
...

ppd_file_t *ppd;

...

ppdMarkDefaults(ppd);
```

Then call the `ppdMarkOption()` function to mark individual options:

```
#include <cups/ppd.h>

...

ppd_file_t *ppd;
int        conflicts;

...

conflicts = ppdMarkOption(ppd, "name", "value");
```

The `name` and `value` strings choose a particular option and choice, respectively. The return value is 0 if there are not conflicts created by the selection.

CUPS also provides a convenience function for marking all options in the `cups_option_t` structure:

```
#include <cups/cups.h>

...

ppd_file_t    *ppd;
int           num_options;
cups_option_t *options;
int           conflicts;

...

conflicts = cupsMarkOptions(ppd, num_options, options);
```

The `cupsMarkOptions()` function also handles mapping the IPP job template attributes to PPD options. The return value is the number of conflicts present.

Checking for Conflicts

The `ppdMarkOption()` and `cupsMarkOptions()` functions return the number of conflicts with the currently marked options.

Call the `ppdConflicts()` function to get the number of conflicts after you have marked all of the options:

```
#include <cups/cups.h>

...

ppd_file_t *ppd;
int        conflicts;

...
```

```
conflicts = ppdConflicts(ppd);
```

The return value is the number of conflicting options, or 0 if there are no conflicts.

3 − Writing Filters

This chapter describes how to write a file filter for CUPS.

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Temporary Files

Page Accounting

Command−Line Arguments

Copy Generation

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4 – Writing Printer Drivers

This chapter discusses how to write a printer driver, which is a special filter program that converts CUPS raster data into the appropriate commands and data required for a printer.

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5 − Writing Backends

This chapter describes how to write a backend for CUPS. Backends communicate directly with printers and allow printer drivers and filters to send data using any type of connection transparently.

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A − Software License Agreement

Common UNIX Printing System License Agreement

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Introduction

The Common UNIX Printing System™, or CUPS™, is provided under the GNU General Public License ("GPL") and GNU Library General Public License ("LGPL"), Version 2. A copy of these licenses follow this introduction.

The GNU LGPL applies to the CUPS API library, located in the "cups" subdirectory of the CUPS source distribution and in the "/usr/include/cups" directory and "/usr/lib/libcups.so" or "/usr/lib32/libcups.so" files in the binary distributions.

The GNU GPL applies to the remainder of the CUPS distribution, including the "pstoraster" filter which is based upon GNU Ghostscript 5.50.

For those not familiar with the GNU GPL, the license basically allows you to:

- Use the CUPS software at no charge.
- Distribute verbatim copies of the software in source or binary form.
- Sell verbatim copies of the software for a media fee, or sell support for the software.
- Distribute or sell printer drivers and filters that use the CUPS API so long as source code is made available under the GPL.

What this license **does not** allow you to do is make changes or add features to CUPS and then sell a binary distribution without source code. You must provide source for any new drivers, changes, or additions to the software, and all code must be provided under the GPL.

The GNU LGPL relaxes the "link−to" restriction, allowing you to develop applications that use the CUPS API library under other licenses and/or conditions as appropriate for your application.

Trademarks

Easy Software Products has trademarked the Common UNIX Printing System, CUPS, and CUPS logo. These names and logos may be used freely in any direct port or binary distribution of CUPS. To use them in derivative products, please contract Easy Software Products for written permission. Our intention is to protect the value of these trademarks and ensure that any derivative product meets the same high−quality standards as the original.

Binary Distribution Rights

Easy Software Products also sells rights to the CUPS source code under a binary distribution license for vendors that are unable to release source code for their drivers, additions, and modifications to CUPS under the GNU GPL and LGPL. For pricing information please contact us at the address shown above.

The Common UNIX Printing System provides a "pstoraster" filter that utilizes GNU GhostScript 5.50 to convert PostScript files into a stream of raster images. For binary distribution licensing of this software, please contact:

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Support

Easy Software Products sells software support for CUPS as well as a commercial printing product based on CUPS called ESP Print Pro. You can find out more at our web site:

http://www.easysw.com

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Version 2, June 1991

Preamble

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Version 2, June 1991

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```

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B − Constants

This appendix lists all of the constants that are defined by the CUPS API.

CUPS Constants

Version Number

The `CUPS_VERSION` constant is a floating−point number representing the API version number. The current version number is 1.0100 which represents CUPS version 1.1.0.

Printer Capabilities

The `CUPS_PRINTER` constants represent capability bits for printers and classes:

- `CUPS_PRINTER_LOCAL` − Is a local printer or class.
- `CUPS_PRINTER_REMOTE` − Is a remote printer or class.
- `CUPS_PRINTER_CLASS` − Is a class.
- `CUPS_PRINTER_BW` − Printer prints in black and white.
- `CUPS_PRINTER_COLOR` − Printer prints in color.
- `CUPS_PRINTER_DUPLEX` − Printer can print double−sided.
- `CUPS_PRINTER_STAPLE` − Printer can staple output.
- `CUPS_PRINTER_COPIES` − Printer can produce multiple copies on its own.
- `CUPS_PRINTER_COLLATE` − Printer can collate copies.
- `CUPS_PRINTER_PUNCH` − Printer can punch holes in output.

- CUPS_PRINTER_COVER − Printer can put covers on output.
- CUPS_PRINTER_BIND − Printer can bind output.
- CUPS_PRINTER_SORT − Printer can sort output.
- CUPS_PRINTER_SMALL − Printer can print on media up to 9x14 inches.
- CUPS_PRINTER_MEDIUM − Printer can print on media from 9x14 to 18x24 inches.
- CUPS_PRINTER_LARGE − Printer can print on media larger than 18x24 inches.
- CUPS_PRINTER_VARIABLE − Printer can print on variable or custom media sizes.
- CUPS_PRINTER_IMPLICIT − Is an implicit class.
- CUPS_PRINTER_OPTIONS − All of the printer capability and option bits.

Encodings

CUPS defines the following character set encoding constants:

- CUPS_US_ASCII − US ASCII character set.
- CUPS_UTF_8 − UTF−8 encoding of Unicode.
- CUPS_ISO8859_1 − ISO−8859−1 character set.
- CUPS_ISO8859_2 − ISO−8859−2 character set.
- CUPS_ISO8859_3 − ISO−8859−3 character set.
- CUPS_ISO8859_4 − ISO−8859−4 character set.
- CUPS_ISO8859_5 − ISO−8859−5 character set.
- CUPS_ISO8859_6 − ISO−8859−6 character set.
- CUPS_ISO8859_7 − ISO−8859−7 character set.
- CUPS_ISO8859_8 − ISO−8859−8 character set.
- CUPS_ISO8859_9 − ISO−8859−9 character set.
- CUPS_ISO8859_10 − ISO−8859−10 character set.
- CUPS_ISO8859_13 − ISO−8859−13 character set.
- CUPS_ISO8859_14 − ISO−8859−14 character set.
- CUPS_ISO8859_15 − ISO−8859−15 character set.
- CUPS_WINDOWS_874 − Windows code page 874.
- CUPS_WINDOWS_1250 − Windows code page 1250.
- CUPS_WINDOWS_1251 − Windows code page 1251.
- CUPS_WINDOWS_1252 − Windows code page 1252.
- CUPS_WINDOWS_1253 − Windows code page 1253.
- CUPS_WINDOWS_1254 − Windows code page 1254.
- CUPS_WINDOWS_1255 − Windows code page 1255.
- CUPS_WINDOWS_1256 − Windows code page 1256.
- CUPS_WINDOWS_1257 − Windows code page 1257.
- CUPS_WINDOWS_1258 − Windows code page 1258.

HTTP Constants

Limits

The following constants define the limits for strings:

- HTTP_MAX_BUFFER − Size of socket buffer.
- HTTP_MAX_HOST − Maximum length of hostname.
- HTTP_MAX_URI − Maximum length of URI.
- HTTP_MAX_VALUE − Maximum length of field values.

Status Codes

The following status codes can be returned by `httpUpdate()`:

- `HTTP_ERROR` − A network error occurred
- `HTTP_CONTINUE` − Continue response from HTTP proxy
- `HTTP_OK` − OPTIONS/GET/HEAD/POST/TRACE command was successful
- `HTTP_CREATED` − PUT command was successful
- `HTTP_ACCEPTED` − DELETE command was successful
- `HTTP_NOT_AUTHORITATIVE` − Information isn't authoritative
- `HTTP_NO_CONTENT` − Successful command
- `HTTP_RESET_CONTENT` − Content was reset/recreated
- `HTTP_PARTIAL_CONTENT` − Only a partial file was recieved/sent
- `HTTP_MULTIPLE_CHOICES` − Multiple files match request
- `HTTP_MOVED_PERMANENTLY` − Document has moved permanently
- `HTTP_MOVED_TEMPORARILY` − Document has moved temporarily
- `HTTP_SEE_OTHER` − See this other link...
- `HTTP_NOT_MODIFIED` − File not modified
- `HTTP_USE_PROXY` − Must use a proxy to access this URI
- `HTTP_BAD_REQUEST` − Bad request
- `HTTP_UNAUTHORIZED` − Unauthorized to access host
- `HTTP_PAYMENT_REQUIRED` − Payment required
- `HTTP_FORBIDDEN` − Forbidden to access this URI
- `HTTP_NOT_FOUND` − URI was not found
- `HTTP_METHOD_NOT_ALLOWED` − Method is not allowed
- `HTTP_NOT_ACCEPTABLE` − Not Acceptable
- `HTTP_PROXY_AUTHENTICATION` − Proxy Authentication is Required
- `HTTP_REQUEST_TIMEOUT` − Request timed out
- `HTTP_CONFLICT` − Request is self−conflicting
- `HTTP_GONE` − Server has gone away
- `HTTP_LENGTH_REQUIRED` − A content length or encoding is required
- `HTTP_PRECONDITION` − Precondition failed
- `HTTP_REQUEST_TOO_LARGE` − Request entity too large
- `HTTP_URI_TOO_LONG` − URI too long
- `HTTP_UNSUPPORTED_MEDIATYPE` − The requested media type is unsupported
- `HTTP_SERVER_ERROR` − Internal server error
- `HTTP_NOT_IMPLEMENTED` − Feature not implemented
- `HTTP_BAD_GATEWAY` − Bad gateway
- `HTTP_SERVICE_UNAVAILABLE` − Service is unavailable
- `HTTP_GATEWAY_TIMEOUT` − Gateway connection timed out
- `HTTP_NOT_SUPPORTED` − HTTP version not supported

Fields

The following fields are indices for each of the standard HTTP fields in HTTP 1/1:

- `HTTP_FIELD_ACCEPT_LANGUAGE` − Accept−Language
- `HTTP_FIELD_ACCEPT_RANGES` − Accept−Ranges
- `HTTP_FIELD_AUTHORIZATION` − Authorization
- `HTTP_FIELD_CONNECTION` − Connection

- HTTP_FIELD_CONTENT_ENCODING − Content−Encoding
- HTTP_FIELD_CONTENT_LANGUAGE − Content−Language
- HTTP_FIELD_CONTENT_LENGTH − Content−Length
- HTTP_FIELD_CONTENT_LOCATION − Content−Location
- HTTP_FIELD_CONTENT_MD5 − Content−MD5
- HTTP_FIELD_CONTENT_RANGE − Content−Range
- HTTP_FIELD_CONTENT_TYPE − Content−Type
- HTTP_FIELD_CONTENT_VERSION − Content−Version
- HTTP_FIELD_DATE − Date
- HTTP_FIELD_HOST − Host
- HTTP_FIELD_IF_MODIFIED_SINCE − If−Modified−Since
- HTTP_FIELD_IF_UNMODIFIED_SINCE − If−Unmodified−Since
- HTTP_FIELD_KEEP_ALIVE − Keep−Alive
- HTTP_FIELD_LAST_MODIFIED − Last−Modified
- HTTP_FIELD_LINK − Link
- HTTP_FIELD_LOCATION − Location
- HTTP_FIELD_RANGE − Range
- HTTP_FIELD_REFERER − Referer
- HTTP_FIELD_RETRY_AFTER − Retry−After
- HTTP_FIELD_TRANSFER_ENCODING − Transfer−Encoding
- HTTP_FIELD_UPGRADE − Upgrade
- HTTP_FIELD_USER_AGENT − User−Agent
- HTTP_FIELD_WWW_AUTHENTICATE − WWW−Authenticate

IPP Constants

Limits

The following constants define array limits for IPP data:

- IPP_MAX_NAME − Maximum length of an attribute name
- IPP_MAX_VALUES − Maximum number of set−of values that can be read in a request.

Tags

- IPP_TAG_ZERO − Wildcard tag value for searches; also used to separate groups of attributes
- IPP_TAG_OPERATION − Tag for values of type operation
- IPP_TAG_JOB − Tag for values of type job
- IPP_TAG_END − Tag for values of type end
- IPP_TAG_PRINTER − Tag for values of type printer
- IPP_TAG_UNSUPPORTED_GROUP − Tag for values of type unsupported_group
- IPP_TAG_UNSUPPORTED_VALUE − Tag for values of type unsupported_value
- IPP_TAG_DEFAULT − Tag for values of type default
- IPP_TAG_UNKNOWN − Tag for values of type unknown
- IPP_TAG_NOVALUE − Tag for values of type novalue
- IPP_TAG_NOTSETTABLE − Tag for values of type notsettable
- IPP_TAG_DELETEATTR − Tag for values of type deleteattr
- IPP_TAG_ANYVALUE − Tag for values of type anyvalue
- IPP_TAG_INTEGER − Tag for values of type integer
- IPP_TAG_BOOLEAN − Tag for values of type boolean

- IPP_TAG_ENUM − Tag for values of type enum
- IPP_TAG_STRING − Tag for values of type string
- IPP_TAG_DATE − Tag for values of type date
- IPP_TAG_RESOLUTION − Tag for values of type resolution
- IPP_TAG_RANGE − Tag for values of type range
- IPP_TAG_COLLECTION − Tag for values of type collection
- IPP_TAG_TEXTLANG − Tag for values of type textlang
- IPP_TAG_NAMELANG − Tag for values of type namelang
- IPP_TAG_TEXT − Tag for values of type text
- IPP_TAG_NAME − Tag for values of type name
- IPP_TAG_KEYWORD − Tag for values of type keyword
- IPP_TAG_URI − Tag for values of type uri
- IPP_TAG_URISCHEME − Tag for values of type urischeme
- IPP_TAG_CHARSET − Tag for values of type charset
- IPP_TAG_LANGUAGE − Tag for values of type language
- IPP_TAG_MIMETYPE − Tag for values of type mimetype

Resolution Units

The IPP_RES_PER_INCH and IPP_RES_PER_CM constants specify dots per inch and dots per centimeter, respectively.

Finishings

The finishing values specify special finishing operations to be performed on the job.

- IPP_FINISH_NONE − Do no finishing
- IPP_FINISH_STAPLE − Staple the job
- IPP_FINISH_PUNCH − Punch the job
- IPP_FINISH_COVER − Cover the job
- IPP_FINISH_BIND − Bind the job

Orientations

The orientation values specify the orientation of the job.

- IPP_PORTRAIT − No rotation
- IPP_LANDSCAPE − 90 degrees counter−clockwise
- IPP_REVERSE_LANDSCAPE − 90 degrees clockwise
- IPP_REVERSE_PORTRAIT − 180 degrees

Qualities

The quality values specify the desired quality of the print.

- IPP_QUALITY_DRAFT − Draft quality
- IPP_QUALITY_NORMAL − Normal quality
- IPP_QUALITY_HIGH − High quality

Job States

The job state values are used to represent the current job state.

- `IPP_JOB_PENDING` − Job is pending
- `IPP_JOB_HELD` − Job is held
- `IPP_JOB_PROCESSING` − Job is processing
- `IPP_JOB_STOPPED` − Job is stopped
- `IPP_JOB_CANCELLED` − Job is cancelled
- `IPP_JOB_ABORTED` − Job is aborted
- `IPP_JOB_COMPLETED` − Job is completed

Printer States

The printer state values are used to represent the current printer state.

- `IPP_PRINTER_IDLE` − Printer is idle
- `IPP_PRINTER_PROCESSING` − Printer is processing
- `IPP_PRINTER_STOPPED` − Printer is stopped

Operations

The operation values represent the available IPP operations.

- `IPP_PRINT_JOB` − Print a file
- `IPP_PRINT_URI` − Print a URI
- `IPP_VALIDATE_JOB` − Validate job attributes
- `IPP_CREATE_JOB` − Create a new job
- `IPP_SEND_DOCUMENT` − Send a document to a job
- `IPP_SEND_URI` − Send a URI to a job
- `IPP_CANCEL_JOB` − Cancel a job
- `IPP_GET_JOB_ATTRIBUTES` − Get job attributes
- `IPP_GET_JOBS` − Get a list of all jobs
- `IPP_GET_PRINTER_ATTRIBUTES` − Get printer attributes
- `IPP_HOLD_JOB` − Hold a pending job
- `IPP_RELEASE_JOB` − Release a held job
- `IPP_RESTART_JOB` − Restart a completed job
- `IPP_PAUSE_PRINTER` − Pause a printer
- `IPP_RESUME_PRINTER` − Restart a paused printer
- `IPP_PURGE_JOBS` − Purge jobs from the queue
- `IPP_SET_PRINTER_ATTRIBUTES` − Set printer attributes
- `IPP_SET_JOB_ATTRIBUTES` − Set job attributes
- `IPP_GET_PRINTER_SUPPORTED_VALUES` − Get printer supported values
- `CUPS_GET_DEFAULT` − Get the default destination
- `CUPS_GET_PRINTERS` − Get a list of all printers
- `CUPS_ADD_PRINTER` − Add or modify a printer
- `CUPS_DELETE_PRINTER` − Delete a printer
- `CUPS_GET_CLASSES` − Get a list of all classes
- `CUPS_ADD_CLASS` − Add or modify a class
- `CUPS_DELETE_CLASS` − Delete a class

- CUPS_ACCEPT_JOBS − Accept jobs on a printer or class
- CUPS_REJECT_JOBS − Reject jobs on a printer or class
- CUPS_SET_DEFAULT − Set the default destination
- CUPS_GET_DEVICES − Get a list of all devices
- CUPS_GET_PPDS − Get a list of all PPDs
- CUPS_MOVE_JOB − Move a job to a new destination

Status Codes

Status codes are returned by all IPP requests.

- IPP_OK − Request completed with no errors
- IPP_OK_SUBST − Request completed but some attribute values were substituted
- IPP_OK_CONFLICT − Request completed but some attributes conflicted
- IPP_BAD_REQUEST − The request was bad
- IPP_FORBIDDEN − You don't have access to the resource
- IPP_NOT_AUTHENTICATED − You are not authenticated for the resource
- IPP_NOT_AUTHORIZED − You not authorized to access the resource
- IPP_NOT_POSSIBLE − The requested operation cannot be completed
- IPP_TIMEOUT − A timeout occurred
- IPP_NOT_FOUND − The resource was not found
- IPP_GONE − The resource has gone away
- IPP_REQUEST_ENTITY − The request was too large
- IPP_REQUEST_VALUE − The request contained a value that was unknown to the server
- IPP_DOCUMENT_FORMAT − The document format is not supported by the server
- IPP_ATTRIBUTES − Required attributes are missing
- IPP_URI_SCHEME − The URI scheme is not supported
- IPP_CHARSET − The charset is not supported
- IPP_CONFLICT − One or more attributes conflict
- IPP_COMPRESSION_NOT_SUPPORTED − The specified compression is not supported
- IPP_COMPRESSION_ERROR − The compressed data contained an error
- IPP_DOCUMENT_FORMAT_ERROR − The document data contained an error in it
- IPP_DOCUMENT_ACCESS_ERROR − The remote document could not be accessed
- IPP_INTERNAL_ERROR − The server encountered an internal error
- IPP_OPERATION_NOT_SUPPORTED − The requested operation is not supported
- IPP_SERVICE_UNAVAILABLE − The requested service is unavailable
- IPP_VERSION_NOT_SUPPORTED − The IPP request version is not supported
- IPP_DEVICE_ERROR − The output device encountered an error
- IPP_TEMPORARY_ERROR − A temporary error occurred
- IPP_NOT_ACCEPTING − The destination is not accepting jobs
- IPP_PRINTER_BUSY − The destination is busy
- IPP_ERROR_JOB_CANCELLED − The requested job has been cancelled
- IPP_MULTIPLE_JOBS_NOT_SUPPORTED − The server does not support multiple jobs

PPD Constants

Raster Constants

C − Structures

This appendix describes all of the structures that are defined by the CUPS API.

D − Functions

This appendix provides a reference for all of the CUPS API functions.

cupsAddOption()

Usage

```
int
cupsAddOption(const char *name,
              const char *value,
              int num_options,
              cups_option_t **options);
```

Arguments

Argument	Description
name	The name of the option.
value	The value of the option.
num_options	Number of options currently in the array.
options	Pointer to the options array.

Returns

The new number of options.

Description

`cupsAddOption()` adds an option to the specified array.

Example

```
#include <cups.h>

...

/* Declare the options array */
int           num_options;
cups_option_t *options;

/* Initialize the options array */
num_options = 0;
options     = (cups_option_t *)0;

/* Add options using cupsAddOption() */
num_options = cupsAddOption("media", "letter", num_options, &options);
num_options = cupsAddOption("resolution", "300dpi", num_options, &options);
```

See Also

`cupsFreeOptions()`, `cupsGetOption()`, `cupsParseOptions()`

cupsCancelJob()

Usage

```
int
cupsCancelJob(const char *dest,
              int job);
```

Arguments

Argument	Description
dest	Printer or class name
job	Job ID

Returns

1 on success, 0 on failure. On failure the error can be found by calling `cupsLastError()`.

Description

`cupsCancelJob()` cancels the specifies job.

Example

```
#include <cups.h>

cupsCancelJob("LaserJet", 1);
```

See Also

`cupsLastError()`, `cupsPrintFile()`

cupsDoFileRequest()

Usage

```
ipp_t *
cupsDoFileRequest(http_t *http,
                  ipp_t *request,
                  const char *resource,
                  const char *filename);
```

Arguments

Argument	Description
http	HTTP connection to server.
request	IPP request data.
resource	HTTP resource name for POST.
filename	File to send with POST request (NULL pointer if none.)

Returns

IPP response data or NULL if the request fails. On failure the error can be found by calling cupsLastError().

Description

cupsDoFileRequest() does a HTTP POST request and provides the IPP request and optionally the contents of a file to the IPP server. It also handles resubmitting the request and performing password authentication as needed.

Example

```
#include <cups.h>

http_t      *http;
cups_lang_t *language;
ipp_t       *request;
ipp_t       *response;

...

/* Get the default language */
language = cupsLangDefault();

/* Create a new IPP request */
request  = ippNew();

request->request.op.operation_id = IPP_PRINT_FILE;
request->request.op.request_id   = 1;

/* Add required attributes */
ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_CHARSET,
```

```
            "attributes-charset", NULL, cupsLangEncoding(language));

ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_LANGUAGE,
             "attributes-natural-language", NULL,
             language != NULL ? language->language : "C");

ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_URI, "printer-uri",
             NULL, "ipp://hostname/resource");

ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_NAME, "requesting-user-name",
             NULL, cupsUser());

/* Do the request... */
response = cupsDoFileRequest(http, request, "/resource", "filename.txt");
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsUser(), httpConnect(), ippAddString(), ippNew()

cupsDoRequest()

Usage

```
ipp_t *
cupsDoRequest(http_t *http,
              ipp_t *request,
              const char *resource);
```

Arguments

Argument	Description
http	HTTP connection to server.
request	IPP request data.
resource	HTTP resource name for POST.

Returns

IPP response data or `NULL` if the request fails. On failure the error can be found by calling `cupsLastError()`.

Description

`cupsDoRequest()` does a HTTP POST request and provides the IPP request to the IPP server. It also handles resubmitting the request and performing password authentication as needed.

Example

```
#include <cups.h>

http_t      *http;
cups_lang_t *language;
ipp_t       *request;
ipp_t       *response;

...

/* Get the default language */
language = cupsLangDefault();

/* Create a new IPP request */
request  = ippNew();

request->request.op.operation_id = IPP_GET_PRINTER_ATTRIBUTES;
request->request.op.request_id   = 1;

/* Add required attributes */
ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_CHARSET,
             "attributes-charset", NULL, cupsLangEncoding(language));

ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_LANGUAGE,
             "attributes-natural-language", NULL,
```

```
            language != NULL ? language->language : "C");

ippAddString(request, IPP_TAG_OPERATION, IPP_TAG_URI, "printer-uri",
            NULL, "ipp://hostname/resource");

/* Do the request... */
response = cupsDoRequest(http, request, "/resource");
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsUser(), httpConnect(), ippAddString(), ippNew()

cupsFreeOptions()

Usage

```
void
cupsFreeOptions(int num_options,
                cups_option_t *options);
```

Arguments

Argument	Description
num_options	Number of options in array.
options	Pointer to options array.

Description

`cupsFreeOptions()` frees all memory associated with the option array specified.

Example

```
#include <cups/cups.h>

int           num_options;
cups_option_t *options;

...

cupsFreeOptions(num_options, options);
```

See Also

cupsAddOption(), cupsGetOption(), cupsMarkOptions(), cupsParseOptions()

cupsGetClasses()

Usage

```
int
cupsGetClasses(char ***classes);
```

Arguments

Argument	Description
classes	Pointer to character pointer array.

Returns

The number of printer classes available.

Description

`cupsGetClasses()` gets a list of the available printer classes. The returned array should be freed using the `free()` when it is no longer needed.

Example

```
#include <cups/cups.h>

int  i;
int  num_classes;
char **classes;

...

num_classes = cupsGetClasses(;

...

if (num_classes > 0)
{
  for (i = 0; i num_classes; i ++)
    free(classes[i]);

  free(classes);
}
```

See Also

cupsGetDefault(), cupsGetPrinters()

cupsGetDefault()

Usage

```
const char *
cupsGetDefault(void);
```

Returns

A pointer to the default destination.

Description

`cupsGetDefault()` gets the default destination printer or class. The default destination is stored in a static string and will be overwritten (usually with the same value) after each call.

Example

```
#include <cups/cups.h>

printf("The default destination is %s\n", cupsGetDefault());
```

See Also

cupsGetClasses(), cupsGetPrinters()

cupsGetOption()

Usage

```
const char *
cupsGetOption(const char *name,
              int num_options,
              cups_option_t *options);
```

Arguments

Argument	Description
name	The name of the option.
num_options	The number of options in the array.
options	The options array.

Returns

A pointer to the option values or `NULL` if the option is not defined.

Description

`cupsGetOption()` returns the first occurrence of the named option. If the option is not included in the options array then a `NULL` pointer is returned.

```
#include <cups/cups.h>

int           num_options;
cups_option_t *options;
const char    *media;

...

media = cupsGetOption("media", num_options, options);
```

See Also

cupsAddOption(), cupsFreeOptions(), cupsMarkOptions(), cupsParseOptions()

cupsGetPassword()

Usage

```
const char *
cupsGetPassword(const char *prompt);
```

Arguments

Argument	Description
prompt	The prompt to display to the user.

Returns

A pointer to the password that was entered or `NULL` if no password was entered.

Description

`cupsGetPassword()` displays the prompt string and asks the user for a password. The password text is not echoed to the user.

Example

```
#include <cups/cups.h>

char *password;

...

password = cupsGetPassword("Please enter a password:");
```

See Also

cupsServer(), cupsUser()

cupsGetPPD()

Usage

```
const char *
cupsGetPPD(const char *printer);
```

Arguments

Argument	Description
printer	The name of the printer.

Returns

The name of a temporary file containing the PPD file or `NULL` if the printer cannot be located or does not have a PPD file.

Description

`cupsGetPPD()` gets a copy of the PPD file for the named printer. The printer name can be of the form "printer" or "printer@hostname".

You should remove (unlink) the PPD file after you are done using it. The filename is stored in a static buffer and will be overwritten with each call to `cupsGetPPD()`.

Example

```
#include <cups/cups.h>

char *ppd;

...

ppd = cupsGetPPD("printer@hostname");

...

unlink(ppd);
```

cupsGetPrinters()

Usage

```
int
cupsGetPrinters(char ***printers);
```

Arguments

Argument	Description
printers	Pointer to character pointer array.

Returns

The number of printer printers available.

Description

`cupsGetPrinters()` gets a list of the available printers. The returned array should be freed using the `free()` when it is no longer needed.

Example

```
#include <cups/cups.h>

int  i;
int  num_printers;
char **printers;

...

num_printers = cupsGetPrinters(;

...

if (num_printers > 0)
{
  for (i = 0; i num_printers; i ++)
    free(printers[i]);

  free(printers);
}
```

See Also

cupsGetClasses(), cupsGetDefault()

cupsLangDefault()

Usage

```
const char *
cupsLangDefault(void);
```

Returns

A pointer to the default language structure.

Description

`cupsLangDefault()` returns a language structure for the default language. The default language is defined by the `LANG` environment variable. If the specified language cannot be located then the POSIX (English) locale is used.

Call `cupsLangFree()` to free any memory associated with the language structure when you are done.

Example

```
#include <cups/language.h>

cups_lang_t *language;
...

language = cupsLangDefault();

...

cupsLangFree(language);
```

See Also

cupsLangEncoding(), cupsLangFlush(), cupsLangFree(), cupsLangGet(), cupsLangString()

cupsLangEncoding()

Usage

```
char *
cupsLangEncoding(cups_lang_t *language);
```

Arguments

Argument	Description
language	The language structure.

Returns

A pointer to the encoding string.

Description

`cupsLangEncoding()` returns the language encoding used for the specified language, e.g. "iso−8859−1", "utf−8", etc.

Example

```
#include <cups/language.h>

cups_lang_t *language;
char        *encoding;
...

language = cupsLangDefault();
encoding = cupsLangEncoding(language);
...

cupsLangFree(language);
```

See Also

cupsLangDefault(), cupsLangFlush(), cupsLangFree(), cupsLangGet(), cupsLangString()

cupsLangFlush()

Usage

```
void
cupsLangFlush(void);
```

Description

`cupsLangFlush()` frees all language structures that have been allocated.

Example

```
#include <cups/language.h>

...

cupsLangFlush();
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsLangFree(), cupsLangGet(), cupsLangString()

cupsLangFree()

Usage

```
void
cupsLangFree(cups_lang_t *language);
```

Arguments

Argument	Description
language	The language structure to free.

Description

`cupsLangFree()` frees the specified language structure.

Example

```
#include <cups/language.h>

cups_lang_t *language;
...

cupsLangFree(language);
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsLangFlush(), cupsLangGet(), cupsLangString()

cupsLangGet()

Usage

```
cups_lang_t *
cupsLangGet(const char *name);
```

Arguments

Argument	Description
name	The name of the locale.

Returns

A pointer to a language structure.

Description

`cupsLangGet()` returns a language structure for the specified locale. If the locale is not defined then the POSIX (English) locale is substituted.

Example

```
#include <cups/language.h>

cups_lang_t *language;

...

language = cupsLangGet("fr");

...

cupsLangFree(language);
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsLangFlush(), cupsLangFree(), cupsLangString()

cupsLangString()

Usage

```
char *
cupsLangString(cups_lang_t *language,
               int         message);
```

Arguments

Argument	Description
language	The language to query.
message	The message number.

Returns

A pointer to the message string or `NULL` if the message is not defined.

Description

`cupsLangString()` returns a pointer to the specified message string in the specified language.

Example

```
#include <cups/language.h>

cups_lang_t *language;
char        *s;
...

language = cupsLangGet("fr");

s = cupsLangString(language, CUPS_MSG_YES);

...

cupsLangFree(language);
```

See Also

cupsLangDefault(), cupsLangEncoding(), cupsLangFlush(), cupsLangFree(), cupsLangGet()

cupsLastError()

Usage

```
ipp_status_t
cupsLastError(void);
```

Returns

An enumeration containing the last IPP error.

Description

`cupsLastError()` returns the last IPP error that occurred. If no error occurred then it will return `IPP_OK` or `IPP_OK_CONFLICT`.

Example

```
#include <cups/cups.h>

ipp_status_t status;

...

status = cupsLastError();
```

See Also

cupsCancelJob(), cupsPrintFile()

cupsMarkOptions()

Usage

```
int
cupsMarkOptions(ppd_file_t *ppd,
                int num_options,
                cups_option_t *options);
```

Arguments

Argument	Description
ppd	The PPD file to mark.
num_options	The number of options in the options array.
options	A pointer to the options array.

Returns

The number of conflicts found.

Description

`cupsMarkOptions()` marks options in the PPD file. It also handles mapping of IPP option names and values to PPD option names.

Example

```
#include <cups/cups.h>

int           num_options;
cups_option_t *options;
ppd_file_t    *ppd;

...

cupsMarkOptions(ppd, num_options, options);
```

See Also

cupsAddOption(), cupsFreeOptions(), cupsGetOption(), cupsParseOptions()

cupsParseOptions()

Usage

```
int
cupsParseOptions(const char *arg,
                 int num_options,
                 cups_option_t **options);
```

Arguments

Argument	Description
arg	The string containing one or more options.
num_options	The number of options in the options array.
options	A pointer to the options array pointer.

Returns

The new number of options in the array.

Description

`cupsParseOptions()` parses the specifies string for one or more options of the form "name=value", "name", or "noname". It can be called multiple times to combine the options from several strings.

Example

```
#include <cups/cups.h>

int           num_options;
cups_option_t *options;

...

num_options = 0;
options     = (cups_option_t *)0;
num_options = cupsParseOptions(argv[5], num_options, &options);
```

See Also

cupsAddOption(), cupsFreeOptions(), cupsGetOption(), cupsMarkOptions()

cupsPrintFile()

Usage

```
int
cupsPrintFile(const char    *printer,
              const char    *filename,
              const char    *title,
              int           num_options,
              cups_option_t *options);
```

Arguments

Argument	Description
printer	The printer or class to print to.
filename	The file to print.
title	The job title.
num_options	The number of options in the options array.
options	A pointer to the options array.

Returns

The new job ID number or 0 on error.

Description

`cupsPrintFile()` sends a file to the specified printer or class for printing. If the job cannot be printed the error code can be found by calling `cupsLastError()`.

Example

```
#include <cups/cups.h>

int           num_options;
cups_option_t *options;
int           jobid;

...

jobid = cupsPrintFile("printer@hostname", "filename.ps", "Job Title",
                      num_options, options);
```

See Also

cupsCancelJob(), cupsLastError(), cupsPrintFiles()

cupsPrintFiles()

Usage

```
int
cupsPrintFiles(const char    *printer,
               int           num_files,
               const char    **files,
               const char    *title,
               int           num_options,
               cups_option_t *options);
```

Arguments

Argument	Description
printer	The printer or class to print to.
num_files	The number of files to print.
files	The files to print.
title	The job title.
num_options	The number of options in the options array.
options	A pointer to the options array.

Returns

The new job ID number or 0 on error.

Description

`cupsPrintFiles()` sends multiple files to the specified printer or class for printing. If the job cannot be printed the error code can be found by calling `cupsLastError()`.

Example

```
#include <cups/cups.h>

int           num_files;
const char    *files[100];
int           num_options;
cups_option_t *options;
int           jobid;

...

jobid = cupsPrintFiles("printer@hostname", num_files, files,
                       "Job Title", num_options, options);
```

See Also

cupsCancelJob(), cupsLastError(), cupsPrintFile()

cupsRasterClose()

Usage

```
void
cupsRasterClose(cups_raster_t *ras);
```

Arguments

Argument	Description
ras	The raster stream to close.

Description

`cupsRasterClose()` closes the specified raster stream.

Example

```
#include <cups/raster.h>

cups_raster_t *ras;

...

cupsRasterClose(ras);
```

See Also

cupsRasterOpen(), cupsRasterReadHeader(), cupsRasterReadPixels(), cupsRasterWriteHeader(), cupsRasterWritePixels()

cupsRasterOpen()

Usage

```
cups_raster_t *
cupsRasterOpen(int fd,
               cups_mode_t mode);
```

Arguments

Argument	Description
fd	The file descriptor to use.
mode	The mode to use; CUPS_RASTER_READ or CUPS_RASTER_WRITE.

Returns

A pointer to a raster stream or NULL if there was an error.

Description

cupsRasterOpen() opens a raster stream for reading or writing.

Example

```
#include <cups/raster.h>

cups_raster_t *ras;

...

ras = cupsRasterOpen(0, CUPS_RASTER_READ);
```

See Also

cupsRasterClose(), cupsRasterReadHeader(), cupsRasterReadPixels(), cupsRasterWriteHeader(), cupsRasterWritePixels()

cupsRasterReadHeader()

Usage

```
unsigned
cupsRasterReadHeader(cups_raster_t *ras,
                     cups_page_header_t *header);
```

Arguments

Argument	Description
ras	The raster stream to read from.
header	A pointer to a page header structure to read into.

Returns

1 on success, 0 on EOF or error.

Description

`cupsRasterReadHeader()` reads a page header from the specified raster stream.

Example

```
#include <cups/raster.h>

int                  line;
cups_raster_t        *ras;
cups_raster_header_t header;
unsigned char        pixels[8192];
...

while (cupsRasterReadHeader(ras, &header))
{
  ...

  for (line = 0; line < header.cupsHeight; line ++)
  {
    cupsRasterReadPixels(ras, pixels, header.cupsBytesPerLine);

    ...
  }
}
```

See Also

cupsRasterClose(), cupsRasterOpen(), cupsRasterReadPixels(), cupsRasterWriteHeader(), cupsRasterWritePixels()

cupsRasterReadPixels()

Usage

```
unsigned
cupsRasterReadPixels(cups_raster_t *ras,
                     unsigned char *pixels,
                     unsigned length);
```

Arguments

Argument	Description
ras	The raster stream to read from.
pixels	The pointer to a pixel buffer.
length	The number of bytes of pixel data to read.

Returns

The number of bytes read or 0 on EOF or error.

Description

`cupsRasterReadPixels()` reads pixel data from the specified raster stream.

Example

```
#include <cups/raster.h>

int                  line;
cups_raster_t        *ras;
cups_raster_header_t header;
unsigned char        pixels[8192];
...

while (cupsRasterReadHeader(ras, &header))
{
  ...

  for (line = 0; line < header.cupsHeight; line ++)
  {
    cupsRasterReadPixels(ras, pixels, header.cupsBytesPerLine);

    ...
  }
}
```

See Also

cupsRasterClose(), cupsRasterOpen(), cupsRasterReadHeader(), cupsRasterWriteHeader(), cupsRasterWritePixels()

cupsRasterWriteHeader()

Usage

```
unsigned
cupsRasterWriteHeader(cups_raster_t *ras,
                      cups_page_header_t *header);
```

Arguments

Argument	Description
ras	The raster stream to write to.
header	A pointer to the page header to write.

Returns

1 on success, 0 on error.

Description

`cupsRasterWriteHeader()` writes the specified page header to a raster stream.

Example

```
#include <cups/raster.h>

int                  line;
cups_raster_t        *ras;
cups_raster_header_t header;
unsigned char        pixels[8192];
...

cupsRasterWriteHeader(ras, &header);

for (line = 0; line < header.cupsHeight; line ++)
{
  ...

  cupsRasterWritePixels(ras, pixels, header.cupsBytesPerLine);
}
```

See Also

cupsRasterClose(), cupsRasterOpen(), cupsRasterReadHeader(), cupsRasterReadPixels(), cupsRasterWritePixels()

cupsRasterWritePixels()

Usage

```
unsigned
cupsRasterWritePixels(cups_raster_t *ras,
                      unsigned char *pixels,
                      unsigned length);
```

Arguments

Argument	Description
ras	The raster stream to write to.
pixels	The pixel data to write.
length	The number of bytes to write.

Returns

The number of bytes written.

Description

`cupsRasterWritePixels()` writes the specified pixel data to a raster stream.

Example

```
#include <cups/raster.h>

int                  line;
cups_raster_t        *ras;
cups_raster_header_t header;
unsigned char        pixels[8192];
...

cupsRasterWriteHeader(ras, &header);

for (line = 0; line < header.cupsHeight; line ++)
{
  ...

  cupsRasterWritePixels(ras, pixels, header.cupsBytesPerLine);
}
```

See Also

cupsRasterClose(), cupsRasterOpen(), cupsRasterReadHeader(), cupsRasterReadPixels(), cupsRasterWriteHeader()

cupsServer()

Usage

```
const char *
cupsServer(void);
```

Returns

A pointer to the default server name.

Description

`cupsServer()` returns a pointer to the default server name. The server name is stored in a static location and will be overwritten with every call to `cupsServer()`

The default server is determined from the following locations:

1. The `CUPS_SERVER` environment variable,
2. The `ServerName` directive in the *cupsd.conf* file,
3. The default host, "localhost".

Example

```
#include <cups/cups.h>

const char *server;

server = cupsServer();
```

See Also

cupsGetPassword(), cupsUser()

cupsTempFile()

Usage

```
char *
cupsTempFile(char *filename,
             int length);
```

Arguments

Argument	Description
filename	The character string to hold the temporary filename.
length	The size of the filename string in bytes.

Returns

A pointer to `filename`.

Description

`cupsTempFile()` generates a temporary filename for the */var/tmp* directory or the directory specified by the `TMPDIR` environment variable.

Example

```
#include <cups/cups.h>

char filename[256];

cupsTempFile(filename, sizeof(filename));
```

cupsUser()

Usage

```
const char *
cupsUser(void);
```

Returns

A pointer to the current username or `NULL` if the user ID is undefined.

Description

`cupsUser()` returns the name associated with the current user ID as reported by the `getuid()` system call.

Example

```
#include <cups/cups.h>

const char *user;

user = cupsUser();
```

See Also

cupsGetPassword(), cupsServer()

httpBlocking()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpCheck()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpClearFields()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpClose()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpConnect()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpDecode64()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpDelete()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpEncode64()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpError()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpFlush()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGet()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGets()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGetDateString()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGetDateTime()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGetField()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpGetLength()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpHead()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpInitialize()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpOptions()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpPost()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpPrintf()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpPut()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpRead()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpReconnect()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpSeparate()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpSetField()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpTrace()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpUpdate()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

httpWrite()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddBoolean()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddBooleans()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddDate()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddInteger()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddIntegers()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddRange()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddRanges()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddResolution()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddResolutions()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddSeparator()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddString()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippAddStrings()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippDateToTime()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippDelete()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippFindAttribute()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippLength()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippNew()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippPort()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippRead()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippTimeToDate()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ippWrite()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdClose()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdConflicts()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

pddEmitFd()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdEmit()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdFindChoice()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdFindMarkedChoice()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdFindOption()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdIsMarked()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdMarkDefaults()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdMarkOption()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdOpenFd()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdOpenFile()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdOpen()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdPageLength()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdPageSize()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also

ppdPageWidth()

Usage

Arguments

Argument	Description

Returns

Description

Example

See Also